Submittal Coversheet

Project Name	**DPS Moore k-8 General Renovation**
DPS Project Number	**PP2218**
Date	**6/17/2014**
Architect	**Short Elliot Hendrickson** 2000 South Colorado Blvd Tower One Suite 6000 Denver, CO 80222
Contractor	**GH Phipps** 5995 Greenwood Plaza Blvd. Suite 100 Greenwood Village, CO 80111
Subcontractor/Prepared by.	**Walrath** 7935 West 14th Ave Lakewood, CO 80215
Supplier	
Manufacturer	Carrier
Submittal Number	235400.01
Specification Section	235400
Drawing Number/Location	MDF 001A

Contractor Review

AHU-1 CU-1

SUBMITTED

GH Phipps CONSTRUCTION COMPANIES

GH Phipps has reviewed and herby submits the attached in accordance with the contract documents.

Note to Subcontractor/ Material Supplier: Subcontractor/ Material Supplier remains responsible for the confirmation and correlation of dimensions at the jobsite; fabrication processes and construction techniques; coordination of the work with the work of other trades; and satisfactory performance of the work.

x

THECEGROUP

THIS SUBMITTAL REVIEW IS FOR GENERAL COMPLIANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. ANY ACTION SHOWN IS SUBJECT TO THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR ALL QUANTITIES, DIMENSIONS (WHICH ARE TO BE CORRELATED AT THE JOB SITE), FABRICATION PROCESSES, MEANS, METHODS AND TECHNIQUES OF CONSTRUCTION, COORDINATION OF THE WORK WITH THAT OF OTHER TRADES, AND THE SATISFACTORY PERFORMANCE OF THE WORK IN A SAFE AND SATISFACTORY MANNER.

	NET	NO EXCEPTIONS TAKEN
✓	AOAN	APPROVED ONLY AS NOTED (PROVIDE CONFIRMATION OF COMPLAINCE)
	R	REJECTED
	RR	REVISE AND RESUBMIT
	SSI	SUBMIT SPECIFIED ITEM

Kristin K. Blundell

Digitally signed by Kristin Blundell
DN: C=US, E=kristinb@thecegroup.com, O=The CE Group, CN=Kristin Blundell
Date: 2014.06.18 11:05:00-06'00'

Architect/Engineer Review

Contractor to coordinate RA/Filter plenum as noted on plans for a vertical installation with a bottom return air inlet.
Provide TXV as required per manufacturer.

Lohmiller&Company

HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West Rocky Mountain Bryant

SUBMITTAL COVER SHEET

JOB: DPS – Dora Moore

LOCATION: Denver, CO

CONTRACTOR: Walrath

ENGINEER: The CE Group

EQUIPMENT

TAG	QTY	MODEL NUMBER	DESCRIPTION
AHU-1	1	FBRCNF030000	FB4C Base Series Fan Coil with Puron, 30,000 BTU Cooling, 208/230-1-60
CU-1	1	38HDR024---3	Performance 13 Series Air Conditioner with Puron, 2 Tons Cooling, 208/230-1-60
AHU-1	1	KFADK0201DSC	Electrical Disconnect Kit
"	1	VCMA15ULS	Little Giant Condensate Pump
"	1	T2900	Venstar Programmable Thermostat
"	1	ACC0400	Outdoor Temperature Sensor
CU-1	1	53DS-900---086	Low Ambient Control
"	1	KAAFT0101AAA	Evaporator Freeze Thermostat
"	1	KAATD0101TDR	Time-Delay Relay
"	1	KAAWS0101AAA	Winter Start Control
"	1	53DS-900---087	Wind Baffle
"	1	KAACH1401AAA	Crankcase Heater
"	1	38L58S38135PEB	35ft Insulated Line Set

LOHMILLER & COMPANY CERTIFIES THE ABOVE DATA TO BE A TRUE ABSTRACT OF MANUFACTURES' CURRENT RATINGS FOR THE PRODUCTS SHOWN.

DATE: 06/16/2014 **PREPARED BY:** **Robert Bernal**

4800 OSAGE STREET DENVER, COLORADO 80221 PHONE: (303) 825-4328 FAX: (303) 820-2302

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HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West

Rocky Mountain Bryant

Fan Coil and Air

Conditioner

SUBMITTAL

Tag: AHU-1, CU-1

Model #: FB4CNF/38HDR

Electrical: 208/230 Volt - 1 Phase – 60 Hertz

Qty: 1 ea.

Revision Date: 06/16/14

4800 Osage Street Denver, Colorado 80221 Phone: (303) 825-4328 Fax: (303) 820-2302

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AHU-1 CU-1

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Prepared By: Robert Bernal

06/16/2014

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Performance Summary 3
Acoustic Summary 4
Certified Drawing 5

Unit Report For AHU-1 CU-1

Project: DPS - Dora Moore K-8 06/16/2014
Prepared By: Robert Bernal

Outdoor Unit Parameters

Unit Model:	**38HDR**	
Unit Size:	**2 Tons**	
Voltage:	**208/230-1-60**	V-Ph-Hz

Indoor Unit Parameters

Unit Model:	**FB4C**	
Unit Size:	**30,000 Btuh**	
Cabinet Insulation:	**Single-piece cabinet with 1-in. super thick insulation**	
Voltage:	**208/230-1-60**	V-Ph-Hz
Heating Size:	**No Heat**	

Outdoor Unit Dimensions and Weight

Unit Length:	**0**	in
Unit Width:	**0**	in
Unit Height:	**0**	in
Unit Shipping Weight:	**198**	lb

Indoor Unit Dimensions and Weight

Unit Length:	**22.06**	in
Unit Width:	**17**	in
Unit Height:	**49**	in
Unit Shipping Weight:	**122**	lb

Warranty Information

OTHER RESIDENTIAL APPLICATIONS (Apartments, Rental Properties, etc.)

The warranty period is five (5) years on parts. The warranty is to the original owner only and is not transferable.

OTHER APPLICATIONS

The warranty period is five (5) years on the compressor, and one (1) year on all other parts. The warranty is to the original owner only and is not transferable.

Ordering Information

Part Number	Description	Quantity
Outdoor Unit		
38HDR024---3	Performance 13 Series Air Conditioner with Puron 2 Tons Cooling	1
	13 SEER @ ARI Conditions	1
Accessories		
53DS-900---086	Low Ambient Control	1
KAAFT0101AAA	Evaporator Freeze Thermostat	1
KAATD0101TDR	Time-Delay Relay	1
KAAWS0101AAA	Winter Start Control	1
53DS-900---087	Wind Baffle	1
KAACH1401AAA	Crankcase Heater	1
Indoor Unit		
FB4CNF030000	FB4C Base Series Fan Coil with Puron 30000 BTU Cooling	1
	Single-piece cabinet with 1-in. super thick insulation	1
Accessories		
KFADK0201DSC	Disconnect Kit	1

Performance Summary For AHU-1 CU-1

Project: DPS - Dora Moore K-8 06/16/2014
Prepared By: Robert Bernal

System Performance

System:	**38HDR/FB4C**	
System Quantity:	**1**	
Altitude:	**5200.0**	ft
Linear Pipe Length:	**0.0**	ft
SEER @ ARI Conditions:	**14.5**	
EER @ ARI Conditions:	**12.0**	
Actual Airflow:	**968.7**	CFM
Standard Airflow:	**800.0**	CFM
Total Net Clg Capacity:	**20.89**	MBH
Net Sensible Clg Capacity:	**20.89**	MBH
Total System Power:	**2.19**	kW

System Parameters

System Parameters

Outdoor Unit Parameters

Unit Model:	**38HDR024---3**	
Unit Size (Nominal):	**2 Tons**	
Voltage:	**208/230-1-60**	V-Ph-Hz
Clg Ent Air DB Ambient:	**105.0**	°F

Indoor Unit Parameters

Unit Model:	**FB4CNF030000**	
Unit Size (Nominal):	**30,000 Btuh**	
Voltage:	**208/230-1-60**	V-Ph-Hz
Ent Air DB:	**80.00**	°F
Ent Air WB:	**62.00**	°F
Ent Enthalpy:	**30.45**	BTU/lb
Lvg Air DB:	**55.82**	°F
Lvg Air WB:	**54.06**	°F
Lvg Enthalpy:	**24.65**	BTU/lb
Heating Size (Nominal):	**No Heat**	
Indoor Unit External Static:	**0.20**	in wg

Electrical Data

Electrical Data

Outdoor Electrical Data

Unit Voltage:	**208/230-1-60**	V-Ph-Hz
Fan Motor FLA:	**0.80**	Amps
MCA:	**17.7**	Amps
Max Fuse:	**25**	Amps
Operating Range Min:	**197**	V
Operating Range Max:	**253**	V
Compressor RLA:	**13.5**	Amps
Compressor LRA:	**58.3**	Amps

Indoor Electrical Data:

(For units with no factory installed electric heaters)

Unit Voltage:	**208/230-1-60**	V-Ph-Hz
Unit FLA:	**2.8**	Amps
Unit MCA:	**3.5**	Amps
Unit MOCP:	**15.0**	Amps
Unit Min Wire Size:	**14.0**	
Unit Fuse/Ckt Bkr Amps:	**15.0**	Amps
Motor HP:	**1/3**	HP

Notice: Indoor Elect. data is for 208/230-1-60 voltage

Acoustic Summary For AHU-1 CU-1

Project: DPS - Dora Moore K-8 06/16/2014
Prepared By: Robert Bernal

Outdoor Unit Parameters:

Unit Model: **38HDR**
Unit Size: **2 Tons**
Variations: **Standard**

Octave Band Center Frequency, Hz	63	125	250	500	1k	2k	4k	8k	dBA
Sound Power,dB	0.0	57.5	61.5	63.0	61.0	60.0	56.0	45.0	
A-Weighted Sound Power, dBA									69.0

Indoor Unit Parameters:

Unit Model: **FB4C**
Unit Size: **30,000 Btuh**
Cabinet Insulation: **Single-piece cabinet with 1-in. super thick insulation**

Octave Band Center Frequency, Hz	63	125	250	500	1k	2k	4k	8k	dBA
Sound Power,dB	67.0	63.0	59.0	56.0	54.0	52.0	48.0	0.0	
A-Weighted Sound Power, dBA									0.0

Certified Drawing for AHU-1 CU-1

Project: DPS - Dora Moore K-8
Prepared By: Robert Bernal

06/16/2014

38HDR

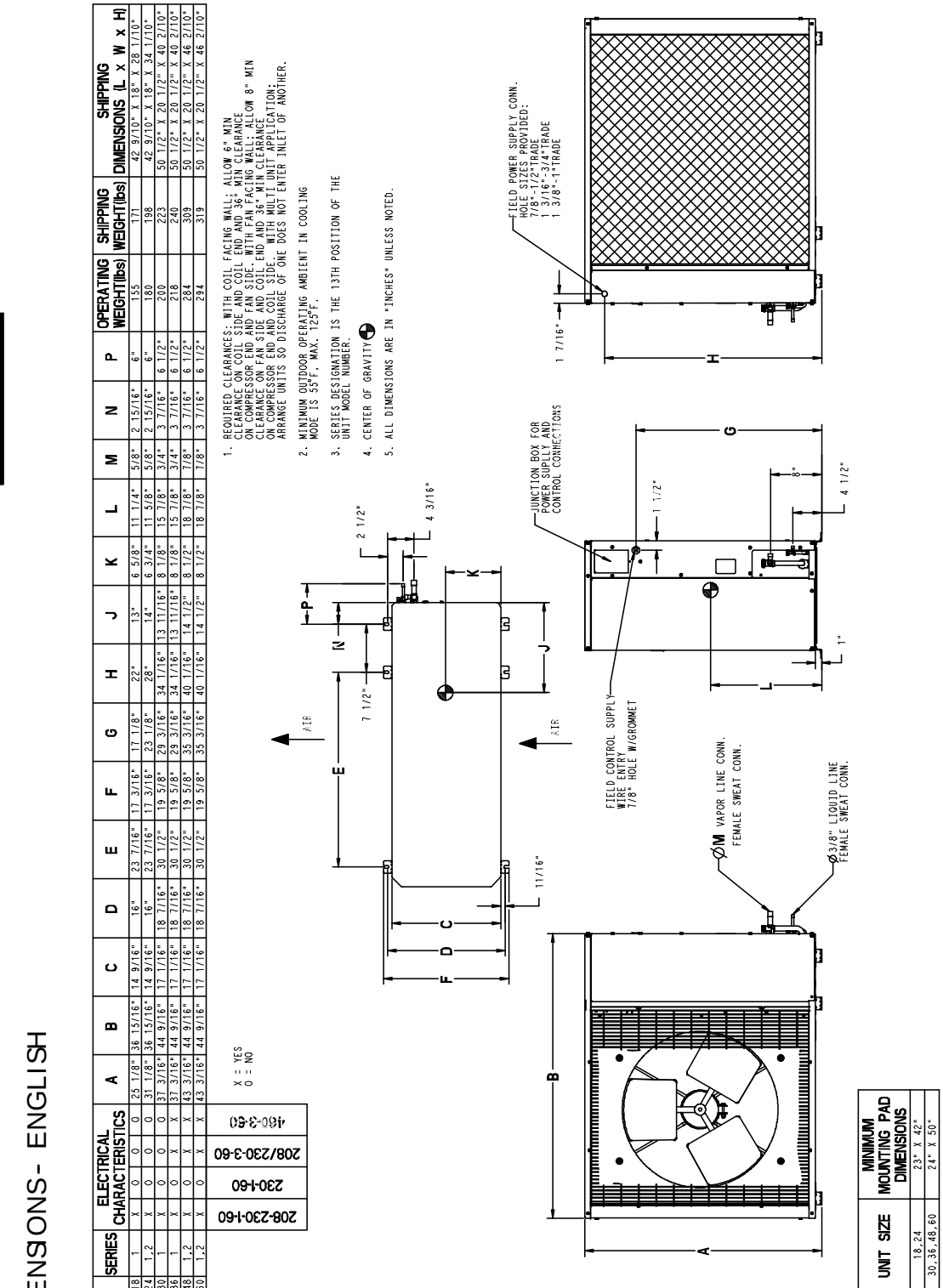
DIMENSIONS- ENGLISH

UNIT	SERIES	ELECTRICAL CHARACTERISTICS				A	B	C	D	E	F	G	H	J	K	L	M	N	P	OPERATING WEIGH-T(lbs)	SHIPPING WEIGH-T(lbs)	SHIPPING DIMENSIONS (L x W x H)
38HDR018	1	X	O	O	25 1/8"	36 15/16"	14 9/16"	16"	23 7/16"	17 3/16"	17 1/8"	22"	13"	6 5/8"	11 1/4"	5/8"	2 15/16"	6"	155	171	42 9/10" X 18" X 28 1/10"	
38HDR024	1,2	X	O	O	31 1/8"	36 15/16"	14 9/16"	16"	23 7/16"	17 3/16"	23 1/8"	28"	14"	6 3/4"	11 5/8"	5/8"	2 15/16"	6"	180	198	42 9/10" X 18" X 34 1/10"	
38HDR030	1	X	O	O	37 3/16"	44 9/16"	17 1/16"	18 7/16"	30 1/2"	19 5/8"	29 3/16"	34 1/16"	13 11/16"	8 1/8"	15 7/8"	3/4"	3 7/16"	6 1/2"	200	223	50 1/2" X 20 1/2" X 40 2/10"	
38HDR036	1	X	O	X	37 3/16"	44 9/16"	17 1/16"	18 7/16"	30 1/2"	19 5/8"	29 3/16"	34 1/16"	13 11/16"	8 1/8"	15 7/8"	3/4"	3 7/16"	6 1/2"	218	240	50 1/2" X 20 1/2" X 40 2/10"	
38HDR048	1,2	X	O	X	43 3/16"	44 9/16"	17 1/16"	18 7/16"	30 1/2"	19 5/8"	35 3/16"	40 1/16"	14 1/2"	8 1/2"	18 7/8"	7/8"	3 7/16"	6 1/2"	284	309	50 1/2" X 20 1/2" X 46 2/10"	
38HDR060	1,2	X	O	X	X	43 3/16"	44 9/16"	17 1/16"	18 7/16"	30 1/2"	19 5/8"	35 3/16"	40 1/16"	14 1/2"	8 1/2"	18 7/8"	7/8"	3 7/16"	6 1/2"	294	319	50 1/2" X 20 1/2" X 46 2/10"

X = YES
O = NO

460-3-60
208/230-3-60
230-1-60
208-230-1-60

1. REQUIRED CLEARANCES: WITH COIL FACING WALL; ALLOW 6" MIN CLEARANCE ON COIL SIDE AND COIL END AND 36" MIN CLEARANCE ON COMPRESSOR END AND FAN SIDE. WITH FAN FACING WALL; ALLOW 8" MIN CLEARANCE ON FAN SIDE AND COIL END AND 36" MIN CLEARANCE ON COMPRESSOR END AND COIL SIDE. WITH MULTI UNIT APPLICATION; ARRANGE UNITS SO DISCHARGE OF ONE DOES NOT ENTER INLET OF ANOTHER.
2. MINIMUM OUTDOOR OPERATING AMBIENT IN COOLING MODE IS 55°F, MAX. 125°F.
3. SERIES DESIGNATION IS THE 13TH POSITION OF THE UNIT MODEL NUMBER.
4. CENTER OF GRAVITY
5. ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.



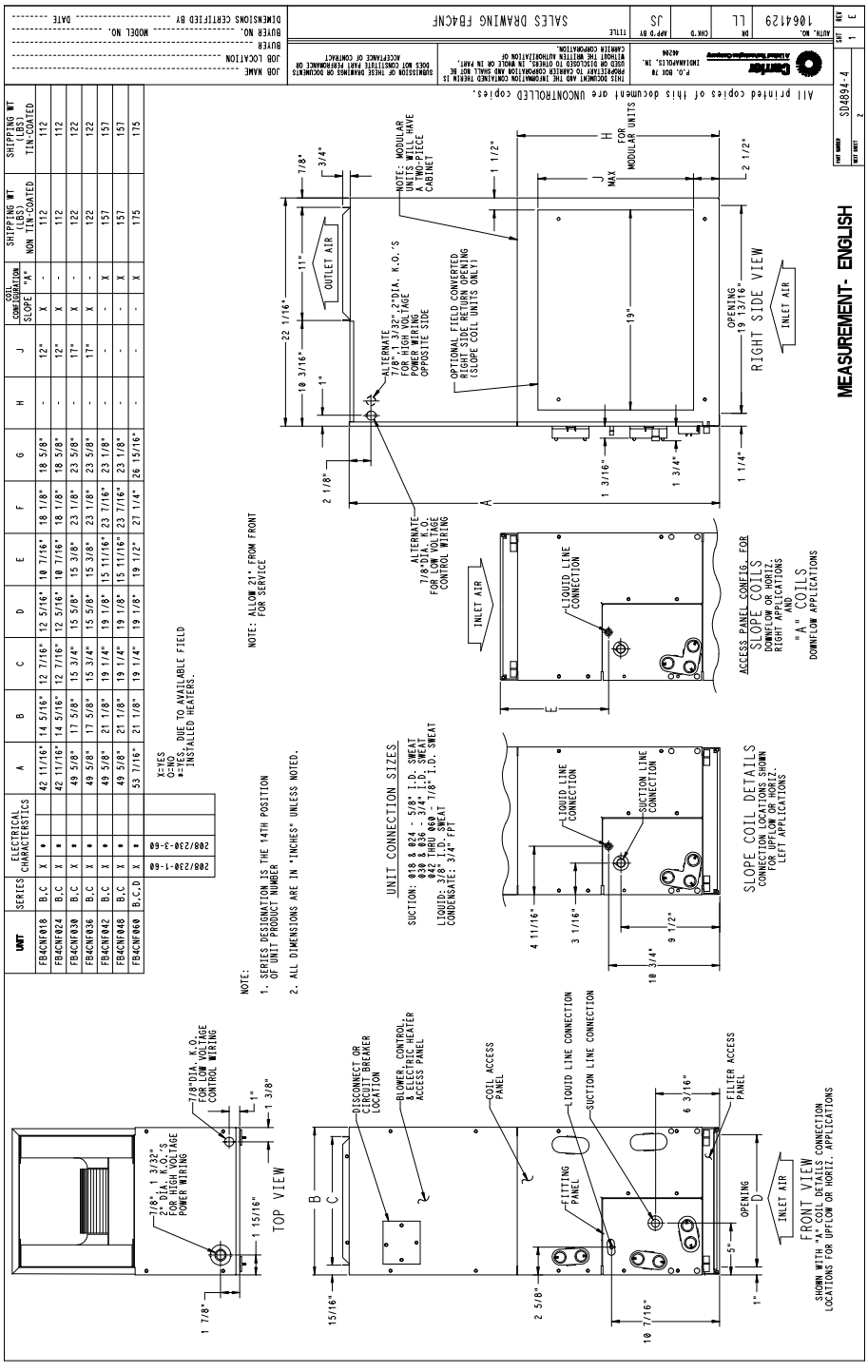
UNIT SIZE	MINIMUM MOUNTING PAD DIMENSIONS
18,24	23" X 42"
30,36,48,60	24" X 50"

Certified Drawing for AHU-1 CU-1

Project: DPS - Dora Moore K-8
Prepared By: Robert Bernal

06/16/2014

DIMENSIONS


MEASUREMENT- ENGLISH
RIGHT SIDE VIEW
TOP VIEW
FRONT VIEW
SLOPE COIL DETAILS
UNIT CONNECTION SIZES
ACCESS PANEL CONFIG. FOR SLOPE COILS
NOTE: ALLOW 21" FROM FRONT FOR SERVICE
NOTE: MODULAR UNITS WILL HAVE A TWO-PIECE CABINET
OPTIONAL FIELD CONVERTED RIGHT SIDE RETURN OPENING (SLOPE COIL UNITS ONLY)
ALTERNATE 7/8" DIA. K.O. FOR HIGH VOLTAGE POWER WIRING OPPOSITE SIDE
ALTERNATE 7/8" DIA. K.O. FOR LOW VOLTAGE CONTROL WIRING
7/8" DIA. K.O. FOR HIGH VOLTAGE POWER WIRING
7/8" DIA. K.O. FOR LOW VOLTAGE CONTROL WIRING
DISCONNECT OR CIRCUIT BREAKER LOCATION
BLOWER, CONTROL & ELECTRIC HEATER ACCESS PANEL
COIL ACCESS PANEL
FITTING PANEL
FILTER ACCESS PANEL
LIQUID LINE CONNECTION
SUCTION LINE CONNECTION
INLET AIR
OUTLET AIR
OPENING
SHOWN WITH "A" COIL DETAILS CONNECTION LOCATIONS FOR UPFLOW OR HORIZ. APPLICATIONS
SALES DRAWING FB4CNF

UNIT	SERIES	ELECTRICAL CHARACTERISTICS			A	B	C	D	E	F	G	H	J	COIL CONFIGURATION SLOPE	COIL CONFIGURATION "A"	SHIPPING WT (LBS) NON TIN-COATED	SHIPPING WT (LBS) TIN-COATED
FB4CNF018	B,C	X	*		42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112	112
FB4CNF024	B,C	X	*		42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112	112
FB4CNF030	B,C	X	*		49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122	122
FB4CNF036	B,C	X	*		49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122	122
FB4CNF042	B,C	X	*		49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157	157
FB4CNF048	B,C	X	*		49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157	157
FB4CNF060	B,C,D	X	*		53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	-	-	-	X	175	175

X=YES
O=NO
*=YES, DUE TO AVAILABLE FIELD INSTALLED HEATERS.

208/230-1-60
208/230-3-60

NOTE:
1. SERIES DESIGNATION IS THE 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

UNIT CONNECTION SIZES
SUCTION: 018 & 024 - 5/8" I.D. SWEAT
030 & 036 - 3/4" I.D. SWEAT
042 THRU 060 - 7/8" I.D. SWEAT
LIQUID: 3/8" O.D. SWEAT
CONDENSATE: 3/4" FPT

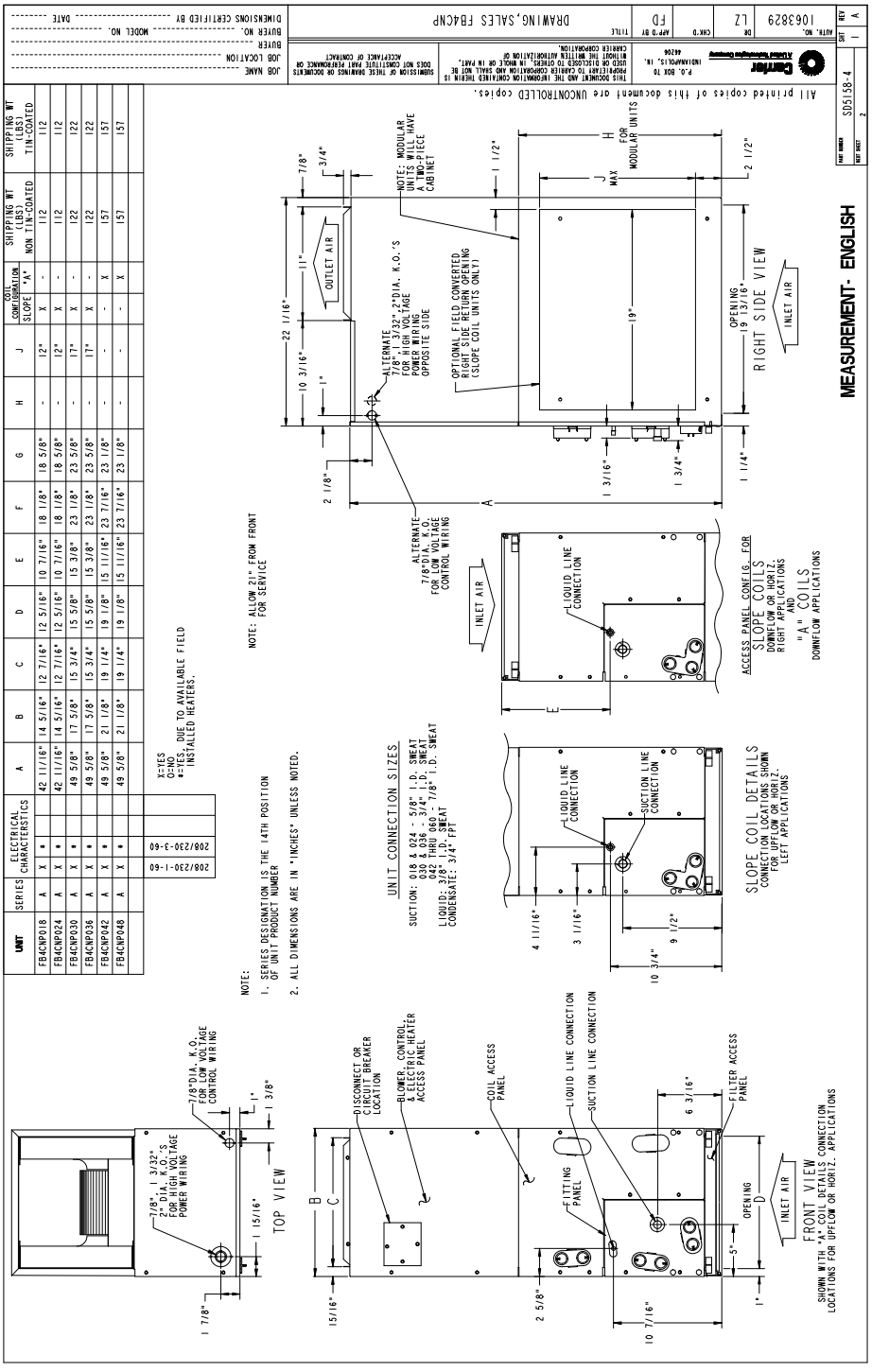
SLOPE COIL DETAILS
CONNECTION LOCATIONS SHOWN FOR UPFLOW OR HORIZ. LEFT APPLICATIONS.

ACCESS PANEL CONFIG. FOR SLOPE COILS
DOWNFLOW OR HORIZ. RIGHT APPLICATIONS
AND
"A" COILS
DOWNFLOW APPLICATIONS

A12512

Fig. 1 -- FB4CNF -- English

DIMENSIONS (cont.)



UNIT	SERIES	ELECTRICAL CHARACTERISTICS			A	B	C	D	E	F	G	H	J	COIL CONFIGURATION SLOPE	COIL CONFIGURATION A*	SHIPPING WT (LBS) NON TIN-COATED	SHIPPING WT (LBS) TIN-COATED
FB4CNP018	A	X	*		42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112	112
FB4CNP024	A	X	*		42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	112	112
FB4CNP030	A	X	*		49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122	122
FB4CNP036	A	X	*		49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	122	122
FB4CNP042	A	X	*		49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157	157
FB4CNP048	A	X	*		49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	157	157

A12508

Fig. 2 -- FB4CNP -- English

Lohmiller&Company

HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West

Rocky Mountain Bryant

Electrical

Disconnect

SUBMITTAL

Tag: AHU-1

Model #: DFADK0201DSC

Qty: 1

Revision Date: 06/16/14

4800 Osage Street Denver, Colorado 80221 Phone: (303) 825-4328 Fax: (303) 820-2302

www.Lohmiller.com

Installation Instructions

Electrical Disconnect Kit

KFADK0201DSC

NOTE: Read the entire instruction manual before starting the installation.
This symbol → indicates a change since the last issue.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory authorized kits or accessories. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Read these instructions thoroughly and follow all warning or cautions attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on unit or in instructions and manuals, be alert to potential for personal injury.

Understand the signal word DANGER, WARNING, CAUTION, and NOTE. These words are used with safety-alert symbol. DANGER identifies most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury or product and property damage.

⚠ **WARNING: Before beginning any installation or modification, be sure the main electrical disconnect switch is in the OFF position. Tag side connect switch with suitable warning label. Electrical shock can cause personal injury or death.**

INTRODUCTION

This instruction covers the installation of electrical disconnect kit Part No. KFADK0201DSC used with FA, FB, FC, FK, FX, FV, 40FK, and PF fan coils. The kit is designed to provide a manual electrical disconnect for units with cooling controls and heaters 3kw through 10kw.

DESCRIPTION AND USAGE

When pull-out is removed on access panel the disconnect allows safe service and maintenance to be performed on the load side of disconnect.

Disconnect Assembly	1
Window Bezel	1
No. 10 Hex Head Screw	3
Installation Instruction	1

⚠ **WARNING: Field wires on the line side of the disconnect are live even with the pull-out removed. Any service or maintenance to incoming wiring must be performed with the main disconnect switch tuned off. Failure to do so will result in electrical shock causing personal injury or death.**

INSTALLATION

1. Turn off electrical supply to fan coil unit.
2. Remove cover plate on blower access panel.
3. Remove blower access panel.
4. Remove pull-out and cover plate from disconnect assembly. Retain cover plate screw.
5. Attach disconnect mounting bracket to unit casing and blower shelf with 2 No. 10 hex head screws provided in kit. Bracket will mount near high-voltage line entry. (See Fig. 1.)
6. Replace yellow and black high voltage pigtail wires from heater with yellow and black wires supplied with disconnect kit. Make sure new wires are installed at the same location from which they were removed.
7. Attach load and line wires to disconnect. (See Fig. 2.) Insert wires into wire connectors. Tighten lugs on line side. Connect ground wire to unit ground lug.
8. Replace cover plate on disconnect assembly using 1 No. 10 hex head screw provided and retained cover plate screw. (See Fig. 1.)

Form AG-FADK-01 Cancels AG-FB4A-20 Printed in U.S.A. 3-03 Catalog No. 63FA-DK0

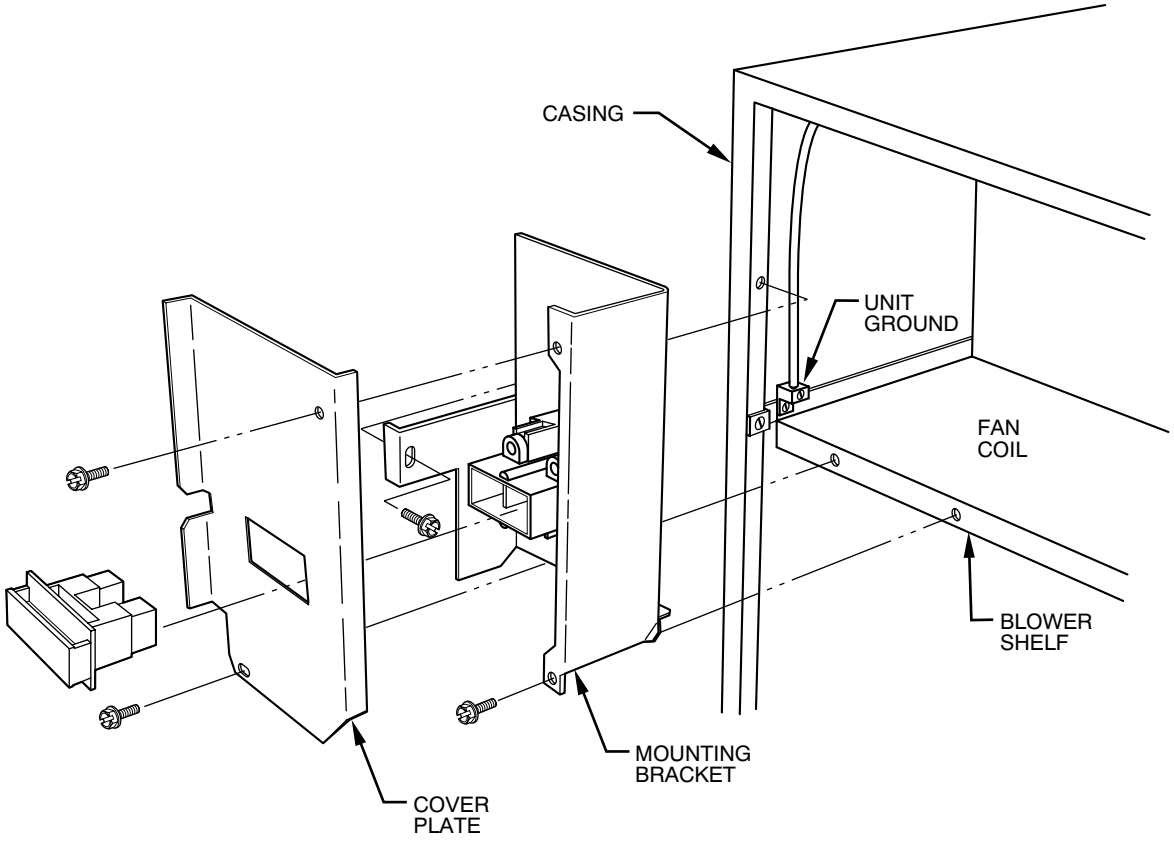


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Fig. 1—Installation of Disconnect Kit

9. Cut insulation away from rectangular access hole in blower access panel.

→ 10. Remove adhesive backing from window bezel. From the outside of the door, insert the window through the rectangular hole in the door. Press the frame firmly on the door surface to seat the adhesive. (See fig.3)

11. Replace blower access panel.

12. Insert pull-out into disconnect assembly so copper conductors engage for continuity.

13. Turn on electrical power supply to fan coil unit and check operation.

⚠ CAUTION: Disconnect pull-out is not intended to interlock with upper access panel. Upper access panel can be removed without disconnecting power.

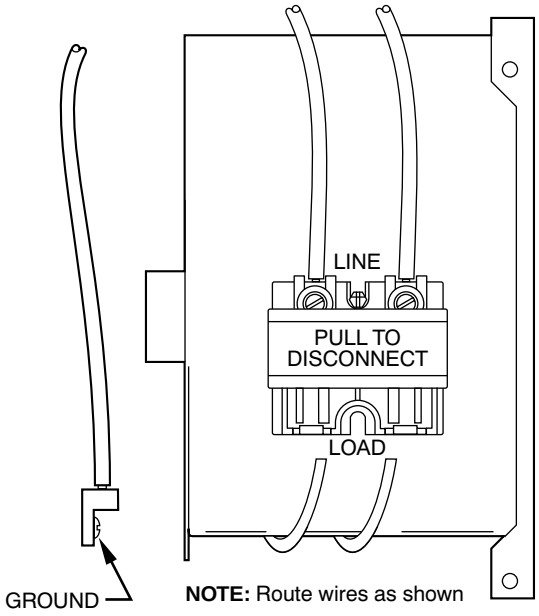

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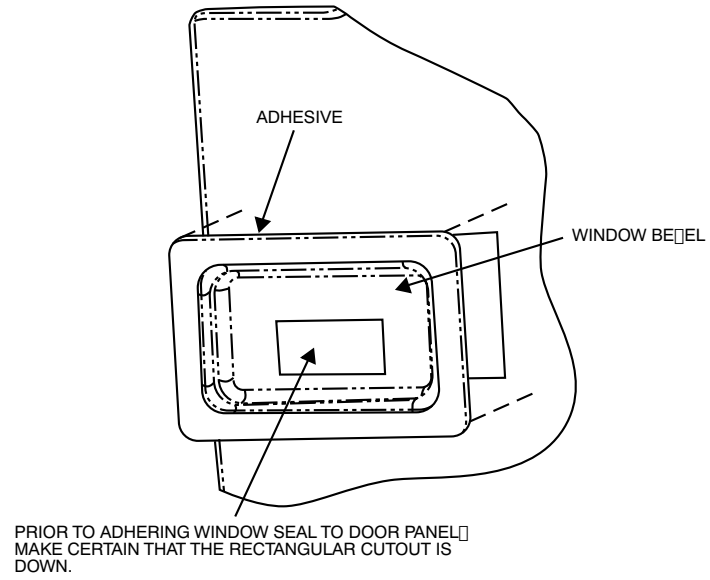
Fig. 2—Wiring Connections



A03064

Fig. 3—Installation of Bezel

Lohmiller&Company

HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West

Rocky Mountain Bryant

Condensate Pump

SUBMITTAL

Tag: AHU-1

Model #: VCMA15ULS

Electrical: 115 Volt - 60 Hertz

Qty: 1

Revision Date: 06/16/14

4800 Osage Street Denver, Colorado 80221 Phone: (303) 825-4328 Fax: (303) 820-2302

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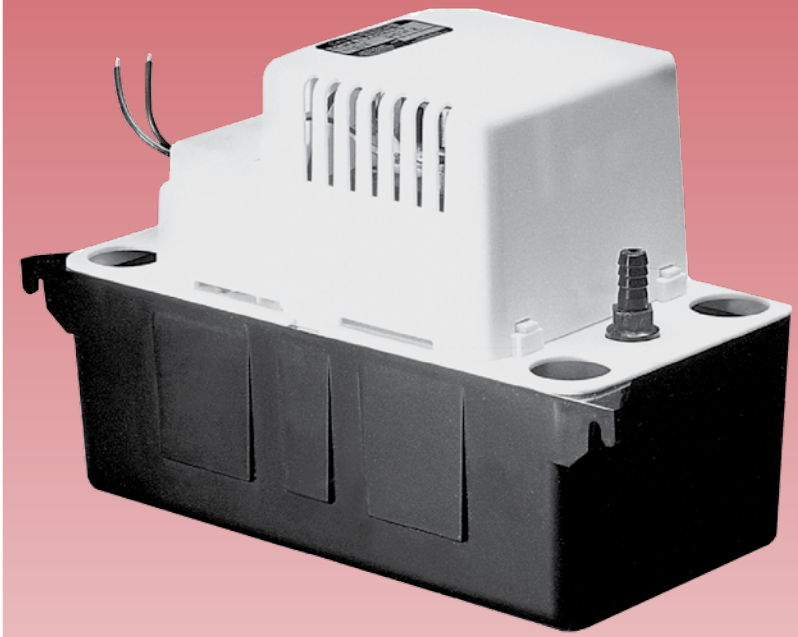
HVAC

VCMA-15 Series



Applications

- Designed for automatic collection and removal of condensate from air conditioning, refrigeration and dehumidification equipment when gravity drainage is not possible or practical. Also suitable for high efficiency oil and gas-fired condensing furnace and condensing boiler equipment.

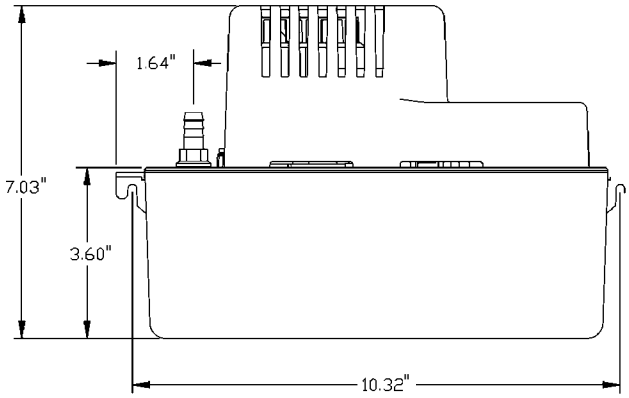
Features

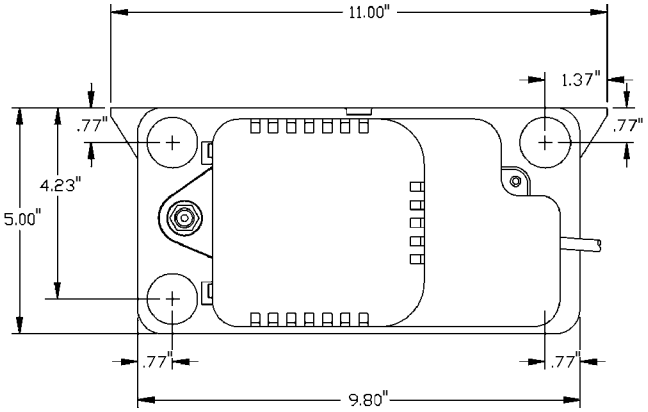
- 1/2 gallon collection tank
- Vertical centrifugal pump design
- Automatic start and stop operation
- Some models equipped with float (solid polymer) activated switch for automatic high level water detection (safety overflow switch)
- For models with safety overflow switch: dual function NO and NC operation (set to NO from factory for equipment shut down connection)
- Models equipped with safety overflow switch include two 5" switch lead wires
- 3/8" O.D. barbed discharge adapter with built-in check valve
- Three 1-1/8" diameter inlet openings (two fitted with removable cap plug)
- Thermally protected, fan cooled motor
- Built-in wall mount tabs on tank
- Removable pump float locking tab for safety during transportation (remove at time of installation)
- Maximum water temperature: 140 °F
- 6 ft, 3-conductor cable with grounded 3-prong plug
- Some models include 20' x 3/8" I.D. vinyl discharge tubing

Specifications

- Motor — 1/50 hp
- Discharge — 3/8" OD barbed
- Housing/tank cover — ABS
- Motor cover — ABS
- Volute — ABS
- Tank — ABS
- Impeller — Glass filled polypropylene
- Check valve — Acetal

Engineering Data





Specifications

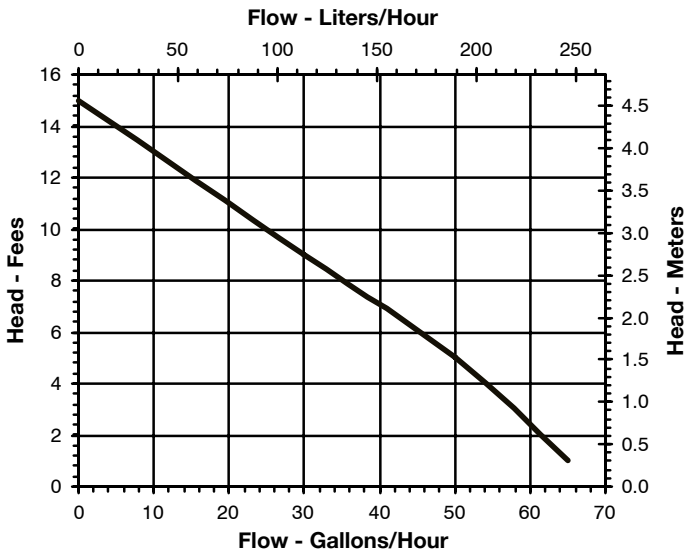
Item No.	Model No.	Discharge Size	HP	Volts	Hertz	Amps	Watts	Performance (GPH@Head)				Shutoff		Cord Length (ft)	Weight (lbs)
								1'	5'	10'	20'	Ft	PSI		
554401	VCMA-15UL	3/8" OD Barbed	1/50	115	60	1	60	65	50	25	0	15	6.5	6	4.40
554411	VCMA-15ULT	3/8" OD Barbed	1/50	115	60	1	60	65	50	25	0	15	6.5	6	5.80
554405	VCMA-15ULS	3/8" OD Barbed	1/50	115	60	1	60	65	50	25	0	15	6.5	6	4.40
554415	VCMA-15ULST	3/8" OD Barbed	1/50	115	60	1	60	65	50	25	0	15	6.5	6	5.80

NOTE: GPH is through check valve.

Replacement Parts

Item	Part Number
Tank	154401
Cover, motor	154421
Float arm	154452
Switch holder	154471
Switch	950337
Check valve	154715

Performance Data



Franklin Electric

P.O. Box 12010
Oklahoma City, OK 73157-2010
Phone: 1.800.701.7894
Fax: 1.800.678.7867
www.LittleGiantPump.com

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HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West

Rocky Mountain Bryant

Thermostat and

Sensor SUBMITTAL

Tag: AHU-1

Model #: T2900/ACC0400

Qty: 1 ea.

Revision Date: 06/16/14

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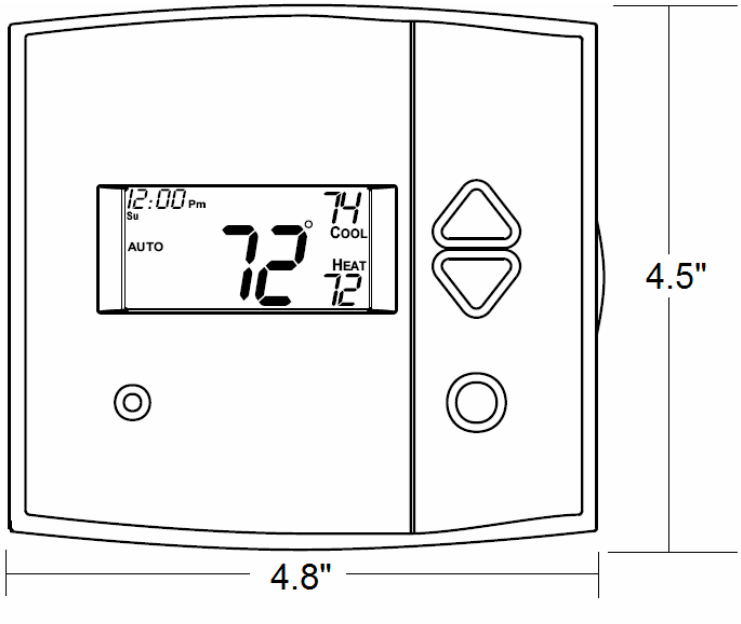
Venstar Programmable Thermostat
T2900



STANDARD FEATURES:

- Up to 3-Occupied, 1-Unoccupied periods per day, with copy command for easy programming
- Light Activated occupied period (defeatable)
- Accepts humidification/dehumidification control module (Venstar part number ACC0430)
- Auto changeover, 3-stage heat, 2-stage cool for use with gas/electric, heat pump, electric & hydronic heat
- Configurable for manual changeover, also configurable programmable or non-programmable
- Adjustable deadbands and timers
- Control to, or monitor a second remote sensor
- Can average up to 8 (wired or wireless) remote sensors
- 3 configurable outputs for maximum flexibility (MISC1, MISC2, MISC3)
- Extra 6th and 7th outputs (beyond our standard thermostat)
- Programmable output (control by time, temperature or internet/phone control)
- Energy Watch keeps Track of energy use by tracking heating and cooling hours
- Smart Fan (keeps the fan from running during unoccupied periods)
- Smart recovery
- Pre-occupancy fan purge
- Display shows both heating an cooling setpoints and room temperature simultaneously
- All programming and setpoints stored in non-volatile memory, and are never lost in power failure
- Service filter and service UV lamp indicators
- Red/Green LED shows whether thermostat is calling for heating or cooling
- 5-minute compressor time guard and adjustable cycle limit, both defeatable for servicing equipment
- Outdoor sensor ready with high and low temperature of the day
- Thermoglow backlit electro-luminous display and backlit color coded keys and legends
- Accepts accessory IR Remote Control system (Venstar part number ACC0431)
- Accepts accessory EZ Programmer (Venstar part number ACC0432)
- For accessory locking cover use (Venstar part number ACC0620)

MODEL:	T2900	QUANTITY:	1	DATE:	06/16/2014
JOB NAME:	DPS - Dora Moore K-8				
LOCATION:	846 Corona Str., Denver, CO 80128				
BUYER:	Walrath			BUYER P.O.#:	
ENGINEER:	The CE Group				

VENSTAR®

WIRED SENSORS

ACCESSORIES

1.4"w x 1.8"h x .63"d

MODEL ACC0401

The remote indoor temperature sensor with override button offers the user the ability to change commercial thermostats to Occupied mode for after-hours heating or cooling. It will measure indoor-air temperature at a remote location from the thermostat. It is a digital sensor designed for use with Venstar thermostats. It can be used with the Venstar T1800, T1900, T2700, T2900, T2900SCH and T2300FS thermostats.*

The sensor will sense room temperature where it is installed. The thermostat will control to the remote temperature sensor reading and show a blinking degree icon next to the temperature display on the thermostat.

MODELS:

ACC0401, TB400, ACC0400, & ACC0435

MODEL TB400

A drop down remote temperature sensor

- Quick and Easy to Install
- Ensure proper zone temperature
- Mock surveillance camera design deters robbery, theft, and vandalism
- Compatible with Surveyor Energy Management System
- Includes T-bar Hanger Bracket (3/4" standard PVC not included)

TB400 is compatible with the Venstar T1800, T1900, T2700, T2900, T2900SCH and T2300FS thermostats.*

MODEL ACC0400

The outdoor air sensor allows the outdoor air temperature to be sent to the thermostat. It can be used with the T1100FS, T1700, T1800, T1900, T2700, T2800, T2900, T2300FS or TSTATEZ thermostats.* The high and low outdoor air readouts for the day can be displayed on the T1800, T1900, T2800 and T2900 thermostats.*

Operating temperature range: -40˚ to +125˚ F.

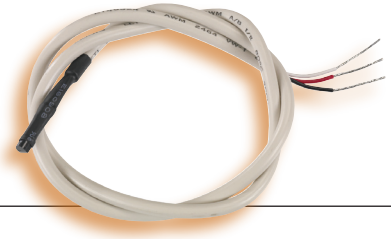
When used as a remote room sensor, the accessory can be used with the Venstar T1800, T1900, T2700, T2900, T2900SCH and T2300FS thermostats.* The sensor may sense room temperature where it is installed. The thermostat will control to the remote temperature sensor reading and show a blinking degree icon next to the temperature display on the thermostat.

2.7"w x 4.5"h x .45"d

MODEL ACC0435

The Remote Duct Sensor for Venstar thermostats is a digital temperature sensor. Constructed with plenum-rated cable, it is designed to be installed inside the return air duct. A grommet is included to protect the cable from the edge of the sheet metal.

This sensor may also be used as a remote room sensor where a discreet sensor is required. When used as a remote room sensor, this accessory can be used with the Venstar T1800, T1900, T2700, T2900, T2900SCH and T2300FS thermostats.* The sensor will sense room temperature where it is installed. The thermostat will control to the remote temperature sensor and show a blinking degree icon next to the temperature display on the thermostat.



* For a complete list, contact VENSTAR.

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HVACR EQUIPMENT | PARTS | CONTROLS | SHEET METAL | HYDRONICS

Carrier West

Rocky Mountain Bryant

Low Ambient, Evap

Freeze T-stat, Time-

Delay Relay, Winter

Start Control,

Wind Baffle,

Crankcase Heater

SUBMITTAL

Tag: CU-1

Model #: 53DS-900---086,

KAAFT0102AA, KAATD0101TDR,

KAAWS0101AAA, 53DS-900---087,

KAACH1401AAA

Qty: 1 ea.

Revision Date: 06/16/14

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WWW.LOHMILLER.COM

53DS–900–––086
53DS–900–––095

Duct–Free Systems

Cooling Only and Heat Pump Units

Low Ambient Temperature Control Accessory

Installation Instructions

NOTE: Read and become familiar with these instructions before beginning installation.

SAFETY CONSIDERATIONS

Installing and servicing air-conditioning equipment can be hazardous due to system pressures and electrical components. Only trained and qualified personnel should install or service air-conditioning equipment. When working on air-conditioning equipment, observe the precautions provided in literature, tags, and labels attached to the unit.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any modification or installation of this kit, be sure the main electrical disconnect is in the OFF position. Ensure power is disconnected to the fan coil unit. On some systems both the fan coil and the outdoor unit may be on the same disconnect. Tag the disconnect switch with a suitable warning label. There may be more than one disconnect.

GENERAL

IMPORTANT: Heat pump models require an isolation relay and field wiring to prevent fan cycling in heat pump mode. See Table 1 for isolation relay part numbers.

Table 1 – Isolation Relay Part Numbers

Models	RCD Part No.	Voltage
38MVQ009/012	P283–0291	120v
38MVQ012	P283–0292	240v
38MVQ018/024	P283–0292	240v
38QRR/QRF	P283–0293	24v
538B_R/538Q_R	P283–0293	24v

Wind baffles are required for low ambient operation. For 38HD, 38QR and 538B models, the baffles are a factory accessory (see Table 2 for part numbers). For 38MVC and 38MVQ models, the baffles are field fabricated using factory drawings (see Table 2 for drawing numbers).

Table 2 – Wind Baffle Accessories for R-410A Units

Models	Wind Baffle Part No.
38HDF/QRF/HDR/QRR018 538E_F/538Q_F018	53DS–900–––070
38HDF/38HDR024, 38HDF030, 38QRF/38QRR024 538E_F/538A_R024 538E_F030 538Q_F/538B_R024	53DS–900–––087
38HDF036/38QRF030/035/036, 38HDR/38QRR030/036 538E_F036 538Q_F030/035/036, 538A_R/538B_R030/036	53DS–900–––071
38HDR/QRR048,060 538A_R/538B_R048,060	53DS–900–––088

Models	Wind Baffle Drawing No.*
38MVC/38MVQ009	53DS–900–––097
38MVC/38MVQ012	53DS–900–––097
38MVC/38MVQ018	53DS–900–––098
38MVC/38MVQ024	53DS–900–––099

*Drawings available on HVAC Partners.

Winter Start Control (part number KAAWS0101AAA) is required when low ambient operation (cooling below 55°F/13°C) is required for cooling and heat pump models (018-060) that have a low pressure switch.

The Winter Start Control kit uses a time-delay relay to bypass the low-pressure switch for three (3) minutes on start-up. the time delay relay will take the low pressure switch out of the control circuit to allow the system to build pressure eliminating nuisance trips. *Units with low pressure switches: 38HDR/HDF/QRR/QRF and 538A_B/E_F, 538Q_F.*

Crankcase Heater is required for low ambient operation and must be added. This is a separate accessory to be installed.

These instructions cover the installation of low ambient temperature control accessory kit on the duct-free cooling and heat pump condensing units.

The low ambient temperature control (LAC) is a high cycle rate pressure switch that directly controls the outdoor fan motor.

The low ambient temperature control is designed to maintain a condensing pressure of 255 to 295 psig on models 38MVC/MVQ and 321 to 362 psig for HDF/HDR and QRF/QRR models by directly cycling the outdoor-fan motor. No field adjustments or calibrations are required.

When unpacking the accessory, carefully inspect for shipping damage. If damage is evident, return for replacement.

INSTALLATION

For 38HDR/QRR Models

1. Remove access panels and locate pressure tap on liquid header.
2. Place three drops of compressor oil in the pressure switch for lubrication.
3. Mount switch as shown in Fig. 1.
4. For heat pump units only, mount isolation relay in control box.
5. Connect wiring as shown in Fig. 3 or Fig. 4.
6. Coil any excess wire and secure next to the pressure switch.

For 38MVC/MVQ Models

1. All of the components required for the correct installation of the low ambient control are included in the kit.
2. Remove access panels and locate pressure tap on liquid line.
3. Place three drops of compressor oil in the pressure switch for lubrication.
4. Mount switch as shown in Fig. 2.
5. For heat pump units only, mount isolation relay in control box.
6. Determine locations for electrical connections (see Fig. 3 or Fig. 5).
7. Cut pressure switch leads to correct length and apply the required terminations from the selection supplied in the low ambient control kit.
8. For heat pump units only, use the cut off lead and terminations supplied with the kit to make up the required field wires as shown in Fig. 5.

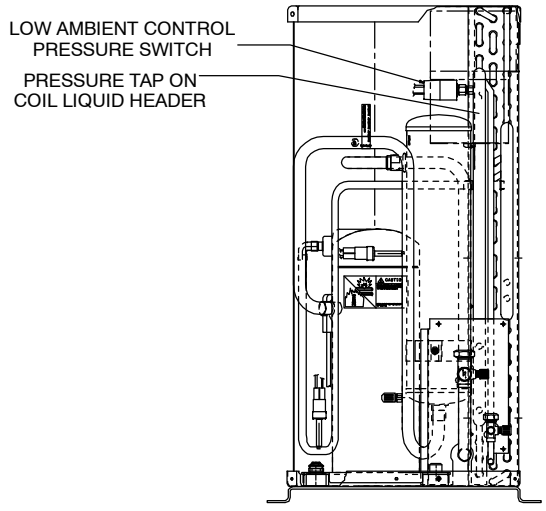

Fig. 1 - Representative of 38HDR/38QRR OR 538A/538B Models

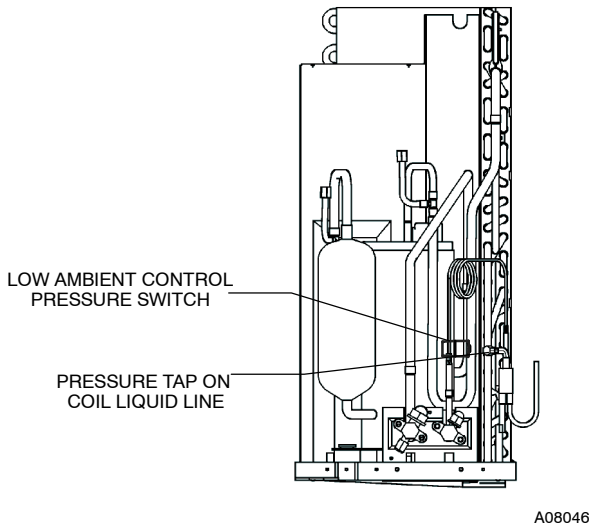

Fig. 2 - Representative of 38MVC/38MVQ Models

COOLING ONLY MODELS	
Model No.	**Wire Color**
38MVC009–024	Black = 009 & 012 Red = 018 & 024
38HDF018–036	Black
38HDR018–060	Black
538A Series	Black
538E Series	Black

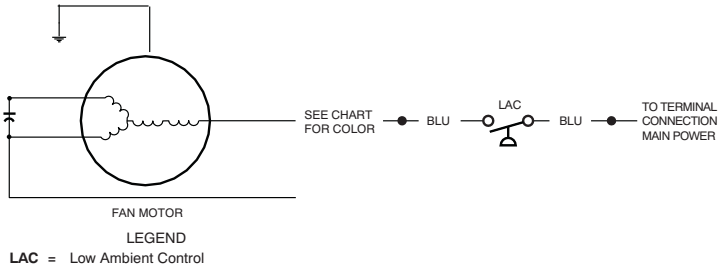

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Fig. 3 - Low Ambient Temperature Control Wiring - Cooling Only Models

HEAT PUMP MODELS (Reversing Valve Energized in Cooling)	
Model No.	**Wire Color**
38QRF018–036	Black
38QRR018–060	Black
538BNR018–060	Black
538QNF018–036	Black

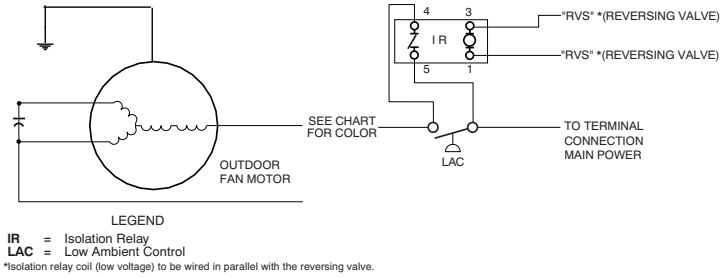

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Fig. 4 - Low Ambient Temperature Control Wiring - Heat Pump Models (Reversing Valve Energized in Cooling)

HEAT PUMP MODELS (Reversing Valve Energized in Heating)	
Model No.	**Wire Color**
38MVQ009–012	Black
38MVQ018–024	Red

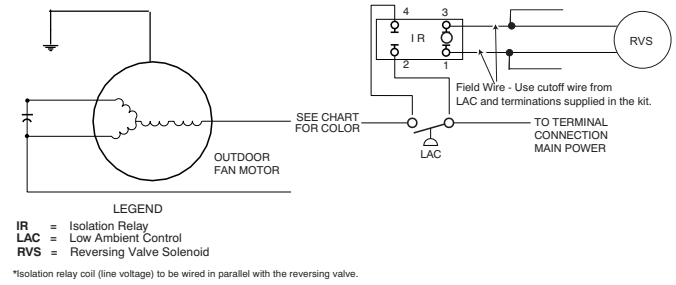

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Fig. 5 - Low Ambient Temperature Control Wiring - Heat Pump Models (Reversing Valve Energized in Heating)

CHECK OPERATION

Before starting the system to check operation of low ambient temperature control, ensure that the power wiring and location of control assembly are correct. To check operation of low ambient temperature control:

1. Turn power on to system.
2. Set thermostat below room temperature.
3. Ensure that there is the standard 3-minute time delay for the microprocessor controlled high wall fan coil systems.
4. Check time delay of installed accessories:
   Under-ceiling (40QAC/QAQ) fan coils using the duct-free 24-v thermostat delay settings: 2 or 4 minute delay.

The outdoor-fan motor will not operate until the condensing pressure reaches the control set point of 295 psig for 38MVC/MVQ models or 362 psig for 38QRF-018-036 and 38QRR-018-060 models (± 10 psig). When the set point is reached, the outdoor fan will cycle to maintain the set point condensing pressure.

If the low ambient temperature control does not operate correctly:

- Ensure that power is being supplied to the system.
- Check condensing pressure: if condensing pressure is below 255 psig for 38MVC/MVQ models or 321 psig for 38QRF-018-036 and 38QRR-018-060 models, the outdoor-fan motor should be off and there should be no voltage across the 2 blue fan power leads coming out of the control. If condensing pressure is about 295 psig or greater for 38MVC/MVQ models or 362 psig for 38QRF-018-036 and 38QRR-018-060 models, the outdoor-fan motor should be on and will cycle off at around 255 psig for 38MVC/MVQ or 321 psig for 38QRF-018-036 and 38QRR-018-060 models.

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Printed in U.S.A. Edition Date: 02/08 **Catalog No: IIK-53DS900-06**

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Replaces: AG-53DS900-01

Installation Instructions

Evaporator Freeze Thermostat — KAAFT0101AAA

NOTE: Read the entire instruction manual before starting the installation.
This symbol → indicates a change since the last issue.

INTRODUCTION

This instruction covers the installation of evaporator freeze thermostat Part No. KAAFT0101AAA on split-system air conditioners and heat pumps. The device is designed to shutdown the outdoor section in the event of indoor coil freeze up, preventing damage to the compressor.

SAFETY CONSIDERATIONS

Installation and servicing of air conditioning equipment can be hazardous due to system pressures and electrical components. Only trained personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils, or cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, tags, and labels attached to the unit.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available.
Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.
Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury or product and property damage.

DESCRIPTION AND USAGE

The evaporator freeze thermostat is recommended to prevent coil freezing. The kit contains the following items:

Temperature switch HH22JB026	1
Installation Instructions	1

⚠ **WARNING: Before beginning any installation or modification, be sure the main electrical disconnect switch is in the OFF position. Electrical shock can cause personal injury or death.**

INSTALLATION

→ The following items must be provided by the field:

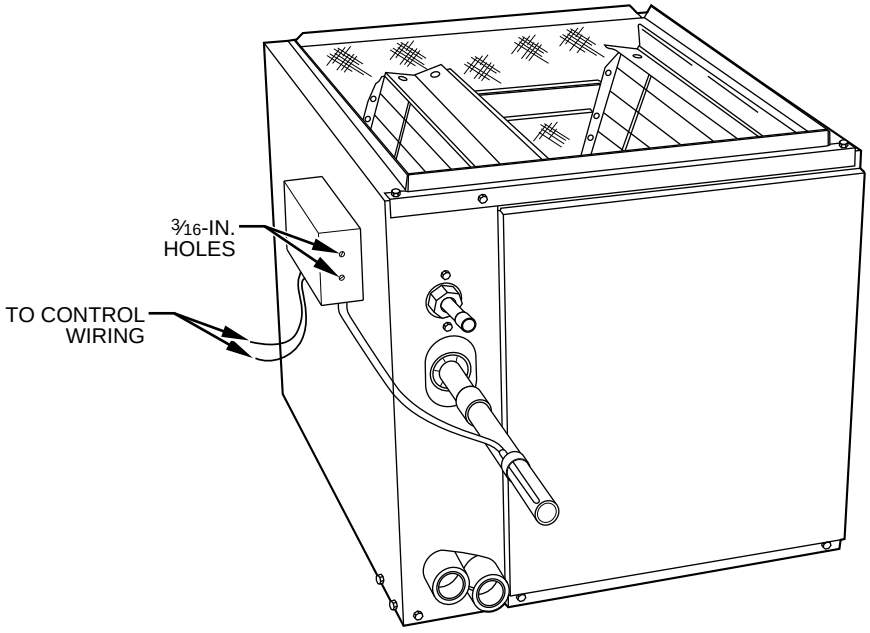
Standard 4 X 4-in. electrical box and cover	1
No. 8-32 X 1/2-in. sheet metal screws	2
No. 10-24 X 1/2-in. sheet metal screws	2
Wire ties	2
16-guage wires (length to be determined by installer)	2
Insulation (Arm-flex) for bulb coverage	

PROCEDURE 1—MOUNT THERMOSTAT

1. Remove knockout in bottom of electrical box.
2. Drill two 3/16-dia clearance holes in right-hand side of electrical box 1 in. apart. Position holes in side of box to ensure clearances for mounting of thermostat. (See Fig. 1.)
3. From within box, pass evaporator freeze thermostat bulb through knockout hole. Do not mount thermostat to box at this time.
4. Attach evaporator freeze thermostat bulb to vapor line, using 2 wire ties, as close to evaporator coil as possible. (See Fig. 1.)
5. Position electrical box on side of plenum or coil casing. Be sure location is NOT near coil surface. Drill two 9/64 or No. 27 holes through holes provided in electrical box into plenum or casing.

⚠ **CAUTION: Exercise extreme caution when drilling holes. Do not puncture coil and/or tubing.**

Form: AG-AAFT-02 Cancels: AG-AAFT-01 Printed in U.S.A. 9-97 Catalog No. 63AA-FT0



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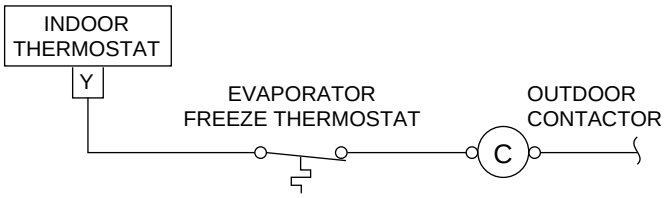
→ **Fig. 1—Mounting Thermostat on Coil Casing**

6. Mount electrical box to plenum or casing using 2 No. 10-24 X 1/2-in. sheet metal screws. (See Fig. 1.)
7. Mount evaporator freeze thermostat to side of electrical box using 2 No. 8-32 X 1/2-in. sheet metal screws.
8. Route wires for bulb through knockout hole in electrical box, and connect to evaporator freeze thermostat.
9. Wire evaporator freeze thermostat in series with Y low-voltage wire from indoor thermostat at indoor unit. (See Fig. 2.)
10. Secure cover to electrical box.
11. Insulate evaporator freeze thermostat bulb.



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→ **Fig. 2—Evaporator Freeze Thermostat Wiring**

KAATD0101TDR

TIME–DELAY RELAY KIT

Installation Instructions

NOTE: Read the entire instruction before beginning the installation.

INTRODUCTION

The Time-Delay Relay permits the indoor fan to briefly continue to operate and provide additional cooling after the compressor cycles off.

SAFETY CONSIDERATIONS

Installing and servicing air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance functions, such as cleaning coils and cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, and on tags and labels attached to the unit.

Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing operations. Have a fire extinguisher available.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any modification be sure the main electrical disconnect is in the OFF position. TAG SWITCH WITH A SUITABLE WARNING LABEL.

INSTALLATION

⚠ CAUTION

ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in personal injury.

Before installing this kit, be sure high- and low-voltage electrical power to indoor section is disconnected.

1. Using screws provided, mount time-delay relay to fan coil or furnace cabinet. Position time-delay relay in convenient place so that wires will be close to connection point. Drill 0.125 in. (use 1/8 drill size) screw holes into cabinet.

NOTE: Check to make sure no components inside cabinet are within drilling range.

2. Paint edges of screw holes to resist rust. Install mounting screws through time-delay relay and into screw holes. Tighten screws securely but do not overtighten.

⚠ CAUTION

ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in personal injury or equipment damage.

The time-delay relay and low-voltage wiring should be physically separated from high-voltage components and wiring.

3. Refer to Fig. 1 for wiring connections.
4. Connect red wire from time-delay relay to terminal R on low-voltage terminal board in fan coil or furnace.
5. Connect brown wire from time-delay relay to terminal C on low-voltage terminal board.
6. Splice wire from thermostat terminal G to black wire from time-delay relay.
7. Connect orange wire from time-delay relay to terminal G on low-voltage terminal board.
8. Affix wiring label next to indoor unit wiring label.
9. Check all connections. Turn on electrical power.
10. Affix caution label on indoor unit access panel to electrical controls.
11. To check function of system, set thermostat to operate in cooling mode. With system “calling for cooling” run for minimum of 5 minutes, then slowly move cooling lever on thermostat to higher setting to satisfy thermostat. Once the thermostat is satisfied, the indoor fan will continue to run approximately 90 seconds, then shut off.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

This accessory package includes an adhesive-backed warning sticker. Affix this sticker prominently to fan coil or furnace after installation.

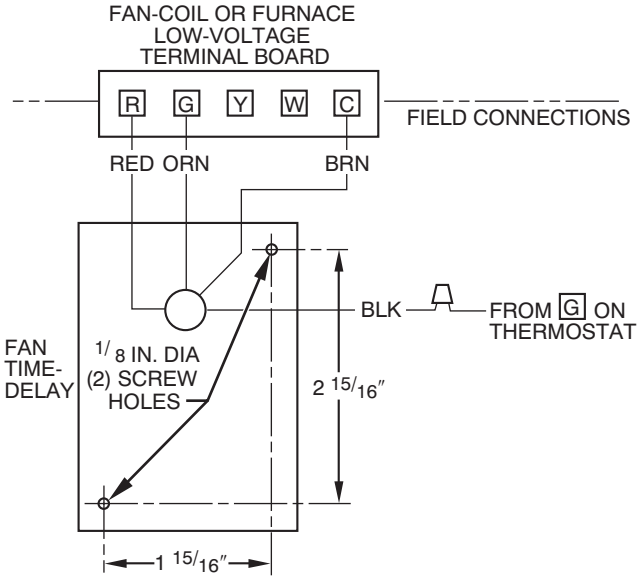

Fig. 1 – Typical Time-Delay Relay Wiring Connection

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Printed in U.S.A. Edition Date: 05/06 **Catalog No: AG-KAATD-02**

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Replaces: AG-AATD-01

KAAWS0101AAA Winter Start Control

Installation Instruction

NOTE: Read the entire instruction manual before starting the installation.

SAFETY CONSIDERATIONS

Installing and servicing air conditioning equipment can be hazardous due to system pressures and electrical components. Only trained personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils, or cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, on tags, and on labels attached to the unit.

Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

Follow all safety codes. Wear safety glasses and work gloves.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any installation or modification, be sure the main electrical disconnect switch is in the OFF position. TAG THE DISCONNECT SWITCH WITH A SUITABLE WARNING LABEL.

This kit is for 24 VAC applications **ONLY**. **Do Not** use or connect to any high voltage wiring.

Use only the kit components described in this installation procedure.

INTRODUCTION

This instruction covers the installation of winter start control Part No. KAAWS0101AAA on split-system air conditioners. The device is designed to alleviate nuisance opening of the low-pressure switch by bypassing it for the first 3 minutes of operation.

DESCRIPTION AND USAGE

Winter start control must be used where low evaporator temperatures, or nuisance tripping of low-pressure switch may be encountered.

The kit contains the following items:

(1) Time-Delay Relay (TDR) CESO130062-00
(1) Installation Instructions
(1) 13” (330 mm) Blue (tap) Wire
(1) 13” (330 mm)Yellow Wire
(1) 13” (330 mm) Brown Wire
(1) Insulated Tap Connector (HY89TC014)

INSTALLATION

NOTE: If a fully communicating Infinity/Evolution Control is being used for low ambient cooling, a winter start control is not required.

For outdoor units with Infinity/Evolution and TechAssist single-stage control boards:

1. Mount the winter start control board in outdoor control box.
2. Connect the following wires to the TDR:
   - 13” (330 mm) Yellow wire to T1 (24 VAC input)
   - 13” (330 mm) Brown wire to T3 (24 VAC common)
   - 13” (330 mm) Blue-tap wire to T2 (N.O. relay contact)
3. Secure the open end of Blue Tap wire to the insulated tap connector (see Fig. 1). To do this, simply butt the tap-wire against the wire stop. Fold the top cover half over to meet the base. Squeeze on the top cover and base with ordinary pliers until the latch locks. DO NOT place pliers on top of the raised plastic flange.
4. Identify the LPS (low pressure switch) connector at the ODU circuit board, and identify the 24vac LPS run-wire (or main lead) for the pressure switch. The LPS run-wire is different between circuit boards (see Fig. 3 and Fig. 4).
   - Infinity/Evolution (HK38EA004) LPS run-wire is connected to pin #1 (see Fig. 3).
   - TechAssist (HK35AC005) LPS run-wire is connected to pin #2 (middle pin) (see Fig. 4).

   Secure the LPS run-wire by inserting the run-wire into the remaining open section of connector. Fold the base over to meet the run-wire section. Squeeze on the base and run-wire section with ordinary pliers until the latch locks. DO NOT place pliers on top of the raised plastic flange.
5. Connect the open strip end of 13” (330 mm) Brown wire to (C) 24vac common side of the ODU and thermostat field connections.
6. Connect the open strip end of 13” (330 mm) Yellow wire to (Y) 24vac side of the ODU and thermostat field connections.

NOTE: The Winter Start Control time-delay logic is now wired in parallel with the outdoor unit low-pressure switch. When indoor thermostat calls, the TDR logic will energize (closing T1, T2) for approximately 3-minutes bypassing the LPS. After 3-minutes, the TDR logic will de-energize (opening T1, T2) and the LPS circuit is restored (see Fig. 2).

Troubleshooting Upon Startup

If the TDR does not energize, make sure LPS run and tap wires are not reversed (double check figures below). You can also apply 24vac direct to T1 and T3 to verify that the TDR relay will energize.

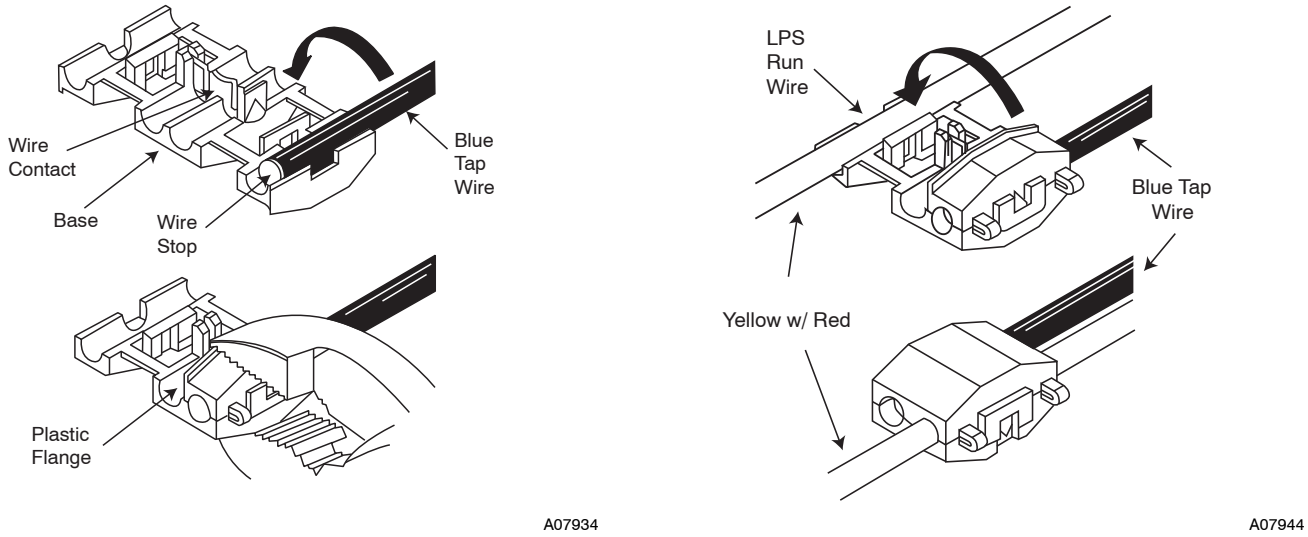

Fig. 1 - Installation

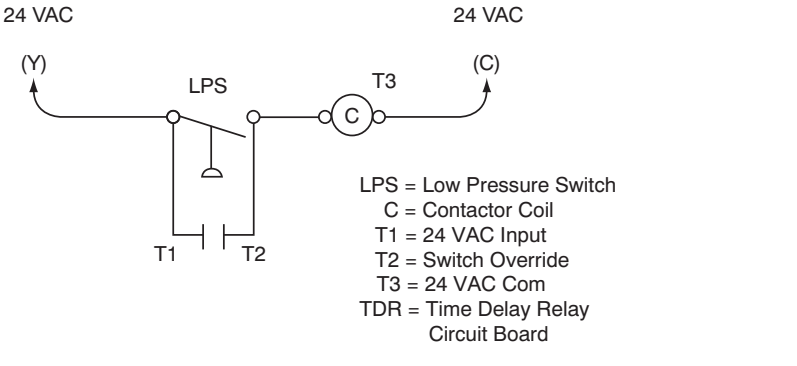

Fig. 2 - Wiring for Winter Start Control

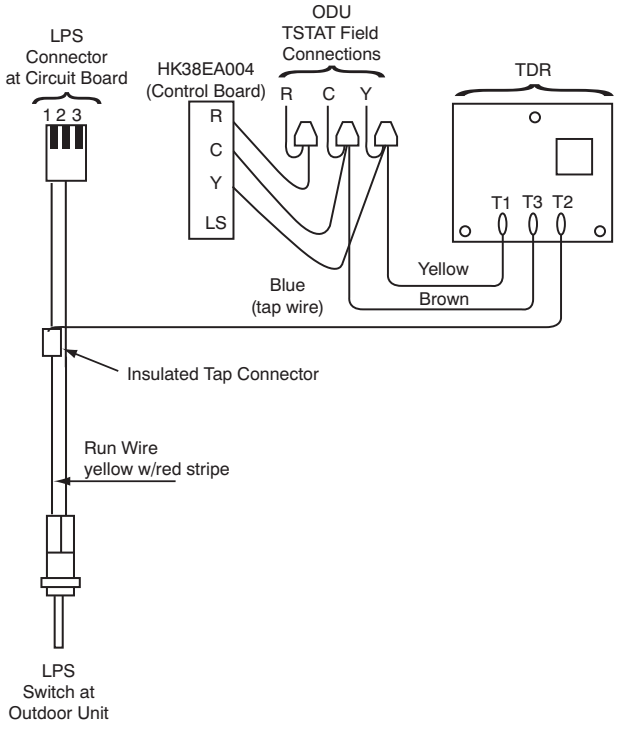

Fig. 3 - Infinity/Evolution (HK38EA004)
LPS Run-Wire is Connected to pin #1

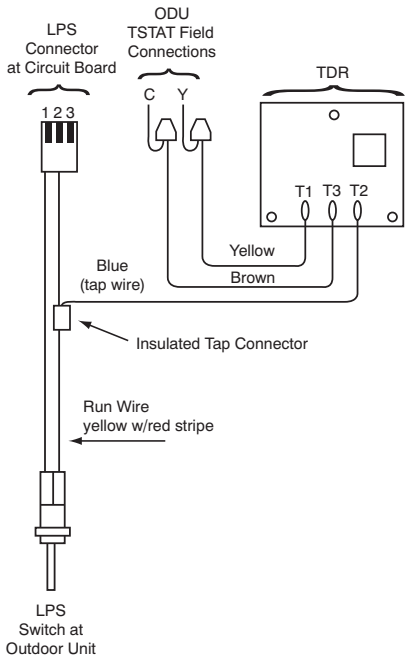

Fig. 4 - TechAssist (HK35AC005)
LPS Run-Wire is Connected to pin #2

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Replaces: AG-AAWS-03

53DS−900−−−070
53DS−900−−−071
53DS−900−−−087
53DS−900−−−088

Duct−Free Systems
Cooling Only and Heat Pump Units (Size 018−060)
Accessory Wind Baffle Kit

Installation Instructions

NOTE: Read and become familiar with these instructions before beginning installation.

SAFETY CONSIDERATIONS

Installing and servicing air-conditioning equipment can be hazardous due to system pressures and electrical components. Only trained and qualified personnel should install or service air-conditioning equipment. When working on air-conditioning equipment, observe the precautions provided in literature, tags, and labels attached to the unit.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC), ANSI/NFPA 70, Canadian Electrical Code CSA C22.1 and local codes and ordinances for special requirements.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any modification or installation of this kit, be sure the main electrical disconnect is in the OFF position. Ensure power is disconnected to the fan coil unit. On some systems both the fan coil and the outdoor unit may be on the same disconnect. Tag the disconnect switch with a suitable warning label. There may be more than one disconnect.

GENERAL

These instructions cover the installation of the accessory wind baffle kit on cooling only, heat pump, and multi-split units. The kit is used with horizontal discharge outdoor units to provide improved unit operation in areas with high winds.

INSTALLATION

Refer to Table 1 for kit contents and usage.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage.
To avoid compressor damage, never turn unit on its side or top when installing kit components.

STEP 1 —Install Z Brackets

1. Remove existing screw from outdoor unit top cover. See Fig. 1.
2. Position top Z bracket between grille and top cover. Be sure shorter top bend of Z bracket slips between top cover flange and metal strip behind top cover flange. See Fig. 1.
3. Reinstall screw removed in Step 1, inserting it through screw hole in top cover and Z bracket. Fasten screw into grille.
4. Install bottom Z bracket in basepan corner, following same procedures. Be sure shorter top bend of Z bracket slips between basepan flange and metal strip behind basepan flange. See Fig. 1.

STEP 2 —Join End and Front Baffles

1. Using the screws provided in kit, join the 2 baffles at their center holes. See Fig. 2. Tighten screws securely.

STEP 3 —Attach End Baffle Flange

1. Remove 3 screws from coil cap. See Fig. 1.
2. Install end baffle flange to Z bracket and use 3 screws removed in Step 1 to secure one end. See Fig. 1 and 2. End baffle flange fits against coil cap. Tighten screws snugly. Do not overtighten.

STEP 4 —Attach Front Baffle Flange

1. Remove 2 screws from access panel. See Fig. 1.
2. Install front baffle flange using 2 screws removed in Step 1. Front baffle flange overlaps end baffle flange where Z brackets are installed. With baffle in place, tighten all screws snugly. Do not overtighten.

Table 1—Kit Contents and Usage

Wind Baffle Kit Part No.	Usage		Kit Contents*
53DS–900– – –070	38HDF018 38HDR018 38QRF018 38QRR018	538ENF018 538ANF018 538QNF018 538BNR018	1 – End Baffle 1 – Front Baffle 2 – Z Brackets 9 – No. 10–1/2 in. Screws
53DS–900– – –087	38HDF024, 030 38HDR024 38QRF024 38QRR024	538ENF024, 030 538ANF024 538QNF024 538BNR024	
53DS–900– – –071	38HDF036 38HDR030, 036 38QRF030, 035, 036 38QRR030, 036	538ENF036 538ANF030, 036 538QNF030, 035, 036 538BNR030, 036	
53DS–900– – –088	38HDR048, 060 38QRR048, 060	538ANF048, 060 538BNR048, 060	

* Kit contents are the same for both kits however, sizes of items may differ depending on application.

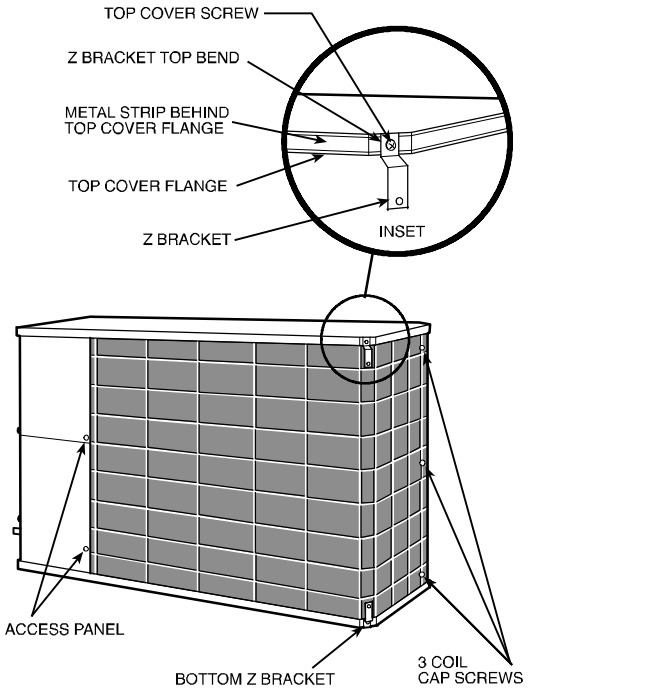

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Fig. 1 – Installing Z Brackets

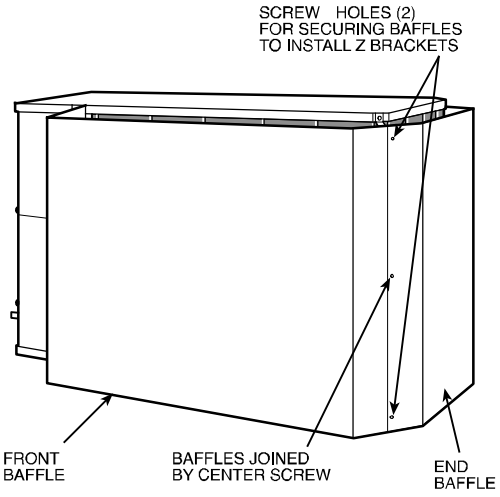

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Fig. 2 – Installing End and Front Baffles

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Printed in U.S.A. Edition Date:02/09 **Catalog No:IIK–53DS–900–WB–01**

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Replaces: IIK–53DS900–2

KAACH1201 KAACH1901
KAACH1301 KAACH2001
KAACH1401 KAACH2101
KAACH1501 KAACH2201
KAACH1601 KAACH2301
KAACH1701 KAACH2401
KAACH1801

Crankcase Heater Kit

Installation Instructions

NOTE: Read the entire instruction manual before starting the installation. Use only the kit components described in this installation procedure.

SAFETY CONSIDERATIONS

Installing and servicing air conditioning equipment can be hazardous due to system pressures and electrical components. Only trained personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils, or cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, on tags, and on labels attached to the unit.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to current editions of the Canadian electrical code CSA 22.1.

Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury or death.

Before beginning any installation or modification, be sure the main electrical disconnect switch is in the OFF position. TAG THE DISCONNECT SWITCH WITH A SUITABLE WARNING LABEL.

INTRODUCTION

This instruction covers the installation of Crankcase Heater Kits in air conditioning equipment.

DESCRIPTION AND USAGE

The crankcase heater warms the compressor crankcase during the off cycle. Crankcase heater is wired across the open contacts of the contactor. When contactor is de-energized, crankcase heater is on. When contacts are closed, no current flows through the heater because it is on the same line voltage side as the compressor. The heater is used to warm the oil, to reduce refrigerant migration, and ensure proper compressor lubrication.

Kit contents:

- Crankcase heater - 1
- Installation Instructions - 1
- Temperature Switch (kits 1601, 1701 and 2101 only) - 1

INSTALLATION

1. Remove unit access panel and control box access panel. Install crankcase heater on compressor as shown in Fig. 1.
2. Wrap heater around compressor base below oil level (heater arms may be spread to slip over piping and terminal box).
3. Position heater below compressor terminal box approximately 2 in. (50.8 mm) above compressor mounting plate.
4. Fasten heater firmly in place with clip provided on heater.

Wiring (kit numbers 1201, 1301, 1401, 1501, 1801, 1901, and 2001)

1. Route crankcase heater wires into control box and attach to quick-connect line voltage terminals 11 and 21 on contactor.
2. Reinstall control and unit access panels and check unit operation.

Wiring (kit numbers 1601, 1701, and 2101)

1. Route the crankcase heater wire with 1/4" quick-connect into control box and attach to quick-connect line voltage on terminal 11 on contactor.
2. Connect the other crankcase heater wire to the temperature switch wire with 3/16" quick-connect.
3. Route the other switch wire into control box and attach to quick-connect line voltage terminal 21 on contactor.

NOTE: Temperature switch must be exposed in ambient temperature. Wire tie temperature switch to wire bundle outside control box enclosure. Reinstall control and unit access panels and check unit operation.

Wiring (kit numbers 2201, 2301 and 2401)

1. Route crankcase heater wires into control box.
2. Attach 1/4" female quick-connect on crankcase heater to line voltage terminal 21 on contactor.
3. Attach 1/4" male quick-connect on crankcase heater to control board female tab labeled CCH.
4. Reinstall control box access panel and check unit operation.

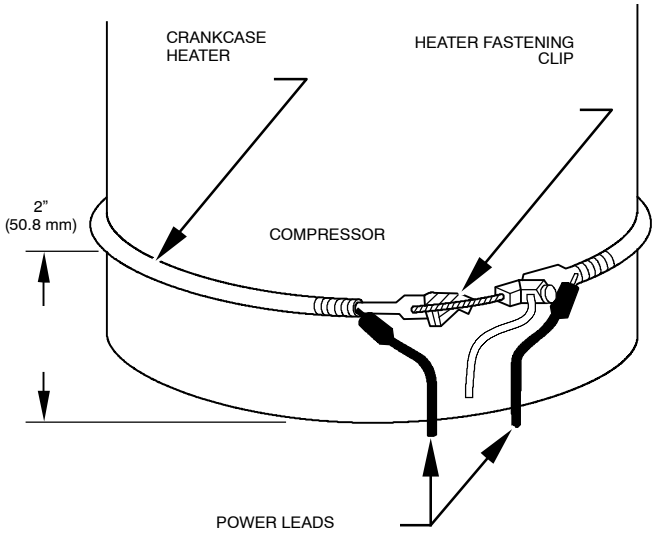

Fig. 1 - Crankcase Heater Installation

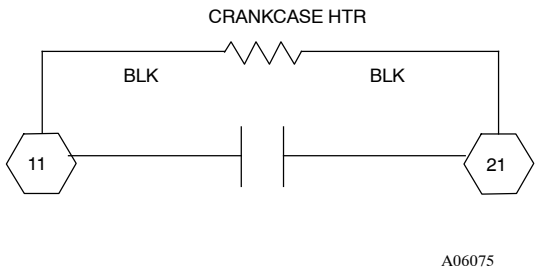

Fig. 2 - Crankcase Heater Wiring (for kit numbers 1201, 1301, 1401, 1501, 1801, 1901, and 2001)

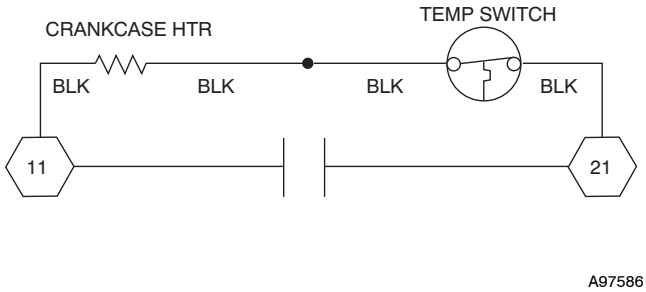

Fig. 3 - Crankcase Heater Wiring (for kit numbers 1601, 1701, and 2101)

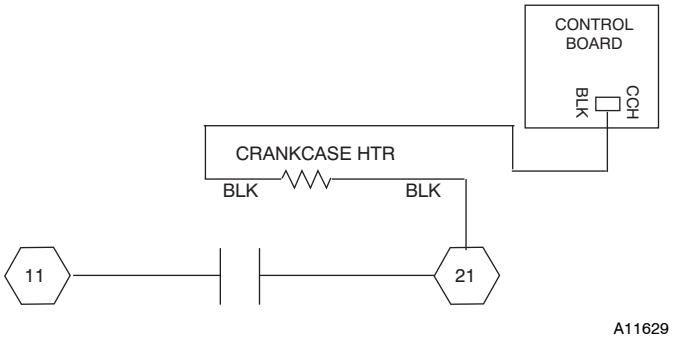

Fig. 4 - Crankcase Heater Wiring (for kit numbers 2201, 2301 and 2401)

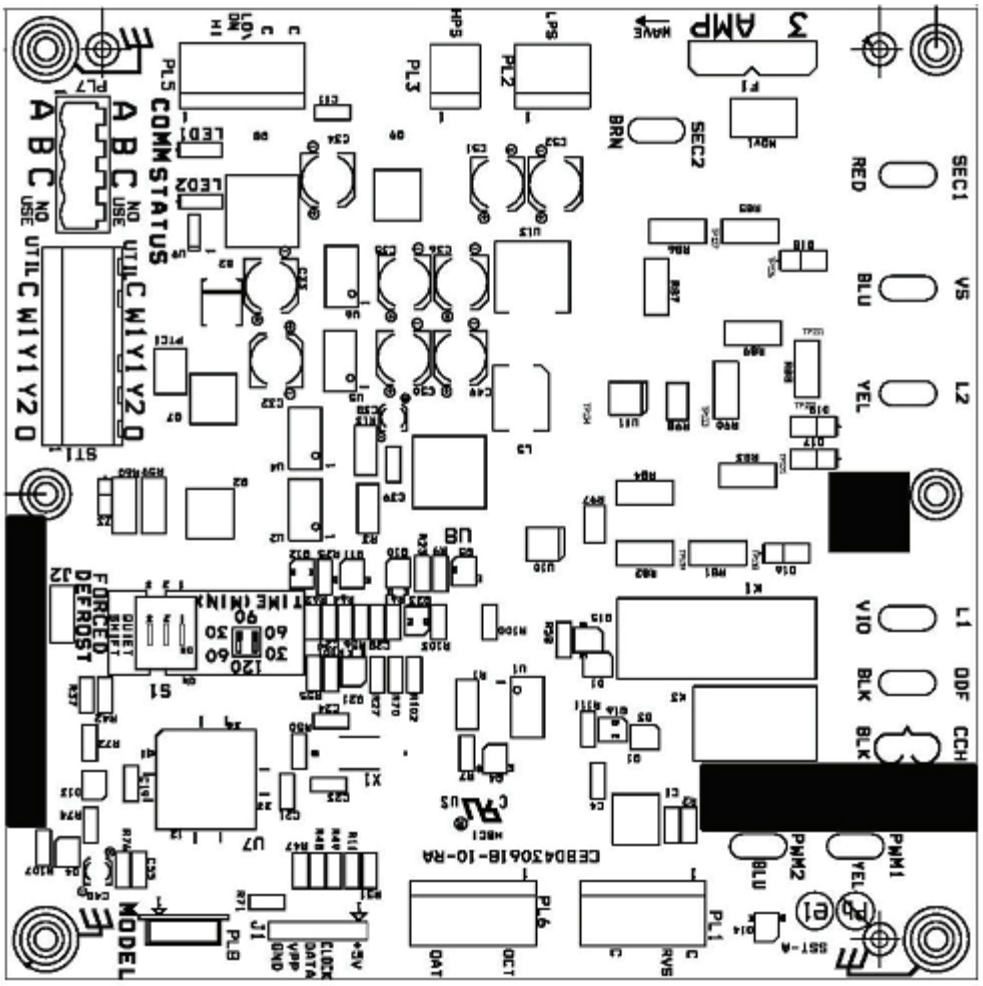

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Fig. 5 - Control Board
(for kit numbers 2201, 2301 and 2401)

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Edition Date: 09/12

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Replaces: IIK-KAACH-08